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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shyh-Kwei Chen

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EXAMINER

KIM, PAUL

ART UNIT

PAPER NUMBER

2161

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,938

Applicant(s)

CHEN ET AL.

Examiner

Paul Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 6 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 09/06/06.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

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DETAILED ACTION

1. This Office action is responsive to the following communication: Amendment filed on 6 September 2006.
2. Claims 1-20 are pending and present for examination. Claims 1, 9, 10, 14 and 15 are independent.

Response to Amendment

3. No claims have been cancelled.
4. Claims 16-20 have been added.
5. Claim 8 has been amended.

Drawings

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

- a. Figure 6, Reference character 605.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claim 20** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "a set of working rectangles in an event space that become progressively smaller in size." It is unclear whether the set of working rectangles or the event space become progressively smaller in size. Additionally, it is unclear as to what is meant by the phrase "progressively smaller."

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. **Claims 1-20** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed invention is directed to the method of monitoring continual range queries against events with no tangible result. See *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601-02, MPEP 2106. "The claimed invention as a whole must accomplish a practical application. That is, it must produce a 'useful, concrete and tangible result'" (emphasis added).

Additionally, data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See *Warmerdarm*, 33 F.3d at 1361, 31 USPQ2d at 1760).

11. **Claims 16-19** are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. The limitations of the claim recite having virtual constructs comprise rectangular object in an event space having at least one dimension. In the case where the event space

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would be one-dimensional, a rectangular object could not exist in the event space. Therefore, the disclosed invention as recited would be inoperable.

12. While claim 5 is not rejected on prior art, it is also not indicated as containing allowable subject matter until such time as the rejections under 35 U.S.C. 101 are overcome.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. **Claim 9** is rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al (NPL Document, "Continual Queries for Internet Scale Event-Driven Information Delivery, hereinafter referred to as LIU), published in 1999.

15. **As per independent claim 9**, LIU teaches:

A method of providing a service of monitoring events or conditions, said method comprising at least one of the following:

providing a service that monitors events against interests of a customer, said service monitoring said events by decomposing continual range queries related to said customer interests with one or predefined virtual constructs, building a query index, and using said query index to match an event with said range queries;

maintaining one or more customer interests expressed as continual range queries for the service that monitors events {See LIU, Section 4.4.2, wherein this reads over "the trigger condition is 'Stock.price(IBM) IncreaseBy% OR Stock.price(Intel) DecreaseBy% 5'"; and "the OpenCQ system may install the database triggers on the data columns or objects of interest"}; and

notifying a subset of said customers whose interests match an event.

Because "providing a service that monitors events against interests of a customer" and "notifying a subset of customers whose interests match an event" were optionally recited within the claim, they do not carry any patentable weight.

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Claim Rejections - 35 USC § 103

16: The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. **Claims 1-4, 6-7, and 10-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over LIU, in view of Burrows et al (U.S. Patent No. 5,915,251, hereinafter referred to as BURROWS), filed on 3 April 1998, and issued on 22 June 1999.

LIU teaches the limitations of claims 2, 4, 6, 7, and 11-13 for the reasons stated herein.

LIU differs from the claimed invention in that LIU fails to disclose a method comprising building a query index.

18. **As per independent claims 1, 10, and 15**, BURROWS, in combination with LIU, discloses:

A method for monitoring continual range queries against events, said method comprising:

decomposing {See BURROWS, Figure 12; and col. 16, lines 57-67, wherein this reads over "Parsing Queries" and "the query module can represent the query expression . . . as a query tree"; and col. 26, lines 12-19, wherein this reads over "[t]he range '57-70' can be converted to a Boolean search for the range-based metawords in the desired range"} each range query into one or more predefined virtual constructs {See BURROWS, col. 25, lines 34-35, wherein this reads over "[t]he predetermined interval can be used to generate a plurality of sets of subintervals"; and See LIU, Section 4.1, page 11, wherein this reads over "decomposing the trigger condition Tcq into a list of Tcq triplets, each triple consists of a basic update event, an atomic conditional event, and a connector to the next triple in the list"};

building a query index {See BURROWS, col. 2, lines 16-23, wherein this reads over "[t]he range-based values are indexed as follows. There is one word entry for each subinterval which includes the range-based values, and the locations associated with the word entries representing the subintervals are the locations of the range-based portions of information"}; and

using said query index to match an event {See LIU, Section 4.4.2, wherein this reads over "the trigger condition is 'Stock.price(IBM) IncreaseBy% OR Stock.price(Intel) DecreaseBy% 5'"; and "the OpenCQ system may install the database triggers on the data columns or objects of interest"} with said range queries {See BURROWS, col. 8, lines 53-55, wherein this reads over "[t]he SIZE and DATE attributes can be searched using range-based values"; and col. 25, lines 20-21, wherein this reads over "the metawords which are to be used for scanning the index are selected from the 'bottom' level up"}.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention suggested by LIU by combining it with the invention disclosed by

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BURROWS. The results of this combination would lead to a method for monitoring continual queries against events wherein range queries (or trigger conditions) are decomposed into virtual constructs (e.g. a list of triplets) and a query index used to match an event with the aforementioned range queries.

One of ordinary skill in the art would have been motivated to do this modification so that a query index may be used to match an event with the continual range queries specified by a user.

19. **As per dependent claim 2**, BURROWS, in combination with LIU, discloses:

The method of claim 1, said building of a query index further comprising: storing an identification of said query {See LIU, Section 3.1, page 7, wherein this reads over "each continual query has a unique entity identifier"} with identification lists associated with said virtual constructs.

20. **As per dependent claim 3**, BURROWS, in combination with LIU, discloses:

The method of claim 1, said building of a query index further comprising:

predefining a set of virtual constructs for each point being monitored {See BURROWS, col. 2, lines 16-23, wherein this reads over "[t]he range-based values are indexed as follows. There is one word entry for each subinterval which includes the range-based values, and the locations associated with the word entries representing the subintervals are the locations of the range-based portions of information"}.

21. **As per dependent claim 4**, BURROWS, in combination with LIU, discloses:

The method of claim 1, said matching of an event with said range queries further comprising: finding all the virtual constructs that cover said event {See LIU, Section 4.1, page 11, wherein this reads over "the condition evaluation manager . . . first select[s] a triplet from the list of Tcq . . . [and] if the connector is WHERE, the next triplet in the list will be used as an add-on condition to the basic update event component"}.

22. **As per dependent claim 6**, BURROWS, in combination with LIU, discloses:

The method of claim 4, wherein the size of the set of covering virtual constructs of an event is constant for all the event points {See LIU, Section 2.1, wherein this reads over "temporal events are supported for time-based trigger condition . . . regular time interval (e.g., execute Q every Monday or every two weeks")}.₂

23. **As per dependent claim 7**, BURROWS, in combination with LIU, discloses, as best understood:

The method of claim 4, wherein gaps between corresponding different covering virtual constructs of all event points are identical {See LIU, Section 2.1, wherein this reads over "temporal events are supported for time-based trigger condition . . . regular time interval (e.g., execute Q every Monday or every two weeks")}.₂

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24. **As per dependent claim 11, BURROWS, in combination with LIU, discloses:**

The system of claim 10, further comprising: at least one sensor to detect occurrence of events {See LIU, Section 4.4.1, wherein this reads over "a temporal event detector"}.

25. **As per dependent claim 12, BURROWS, in combination with LIU, discloses:**

The system of claim 10, further comprising: at least one client input station to permit a client to provide an input query {See LIU, Figure 1, page 20; and Chapter 5, page 19, wherein this reads over "[t]he client tier has four components: (1) The form manager that provides the CQ clients with fill-in forms to register and install their continual queries"}.

26. **As per dependent claim 13, BURROWS, in combination with LIU, discloses:**

The system of claim 10, further comprising: at least one client receiver to permit a client to be notified of occurrence of an event of interest {See LIU, Chapter 5, page 20, wherein this reads over "[t]he results can be returned to the user also by multiple modes, such as by email, fax, phone, bulletin posting, or displaying signals on users' desktop screens"}.

27. **As per independent claim 14, BURROWS, in combination with LIU discloses:**

An apparatus for monitoring continual range queries against events, said apparatus comprising one of:

a query monitor that includes:

a decomposing module that decomposes each range query into one or more predefined virtual constructs {See BURROWS, Figure 12; and col. 16, lines 57-67, wherein this reads over "Parsing Queries" and "the query module can represent the query expression . . . as a query tree"; and col. 26, lines 12-19, wherein this reads over "[t]he range '57-70' can be converted to a Boolean search for the range-based metawords in the desired range"; and See LIU, Section 4.1, page 11, wherein this reads over "decomposing the trigger condition Tcq into a list of Tcq triplets, each triple consists of a basic update event, an atomic conditional event, and a connector to the next triple in the list"}.

a query index construction module {See BURROWS, col. 2, lines 16-23, wherein this reads over "[t]he range-based values are indexed as follows. There is one word entry for each subinterval which includes the range-based values, and the locations associated with the word entries representing the subintervals are the locations of the range-based portions of information"}; and

an event matching module that uses said query index to match an event {See LIU, Section 4.4.2, wherein this reads over "the trigger condition is 'Stock.price(IBM) IncreaseBy% OR Stock.price(Intel) DecreaseBy% 5'"; and "the OpenCQ system may install the database triggers on the data columns or objects of interest"} with said range queries {See BURROWS, col. 8, lines 53-55, wherein this reads over "[t]he SIZE and DATE attributes can be searched using range-based values"; and col. 25, lines 20-21, wherein this reads over "the metawords which are to be used for scanning the index are selected from the 'bottom' level up"}.

a sensor to detect occurrence of events and provides said occurrence of events into said query monitor {See LIU, Section 4.4.1, wherein this reads over "a temporal event detector"};

a client receiver to permit a client to be notified of occurrence of an event of interest to said client {See LIU, Chapter 5, page 20, wherein this reads over "[t]he results can be returned

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to the user also by multiple modes, such as by email, fax, phone, bulletin posting, or displaying signals on users' desktop screens"}.

Response to Arguments

28. Applicant's arguments filed 6 September 2006 have been fully considered but they are not persuasive.

a. Applicant's Arguments:

i. 35 U.S.C. 101

As per claims 1-15, Applicant asserts that "the result is inherently tangible, since any stage in the execution of the process by a computer is measurable by one having ordinary skill in the art" (Amendment, pages 11-12).

ii. 35 U.S.C 103(a) based on Liu et al, in view of Burrows et al

As per claims 1-4, 6, 7, and 10-15, Applicant asserts the following arguments:

(1) "Liu does not have such [an] index mechanism" of the present invention (Amendment, page 13);

(2) "Liu fails to satisfy the plain meaning of the claim language, since there is no decomposition step in Liu" (Amendment, page 13);

(3) Liu is disqualified as a primary reference since "no indexing is described as used to correlate event points in a monitored event space and the continual query and where no decomposition of the query occurs (Amendment, page 13); and

(4) Burrows fails to satisfy the plain meaning of the claim language since it fails to disclose "[an] indexing scheme . . . between an entry of the database and a plurality of queries" (Amendment, pages 13-14).

iii. Optional-recited claim language

As per claim 9, Applicant asserts the argument that "since claim limitations are often expressed in the alternative with no effect on patentable weight" (Amendment, page 14).

b. Response to Arguments:**i. 35 U.S.C. 101**

As per claims 1-15 and Applicant's assertion that "the result is inherently tangible, since any stage in the execution of the process by a computer is measurable by one having ordinary skill in the art," it is noted that the features upon which applicant relies (i.e., the execution of the methods by a computer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

ii. 35 U.S.C 103(a) based on Liu et al, in view of Burrows et al

(1) As per Applicant's assertion that "Liu does not have such [an] index mechanism" of the present invention, and particularly in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

(2) As per Applicant's assertion that "Liu fails to satisfy the plain meaning of the claim language, since there is no decomposition step in Liu," Applicant is directed to Section 3.2 of Liu which discloses that "[m]ediators and wrappers are used to decompose the query or trigger condition according to the number of data sources used to evaluate the query or the trigger condition" (Liu, page 8). One of ordinary skill in the art at the time the invention was made would be able to properly discern that the aforementioned disclosure would read upon and satisfy the decomposition step of the present invention. Furthermore, Applicant is directed to Section 2.1 of Liu wherein the Continual Query Concept is further disclosed, specifically that the processing of a continual query on a sequence of database states results in a sequence of query answers $\{Q(S_1), Q(S_2), \dots$,

$Q(S_n)\}$. Therefore, as disclosed within Section 2.1 of Liu, one of ordinary skill in the art would then be able to apply the continual queries to time-based trigger conditions and content-based trigger conditions. Accordingly, the continual query may then be decomposed as stated in the claim limitations of the present invention.

(3) As per Applicant's assertion that Liu is disqualified as a primary reference since "no indexing is described as used to correlate event points in a monitored event space and the continual query and where no decomposition of the query occurs, Applicant is directed to the reasons set forth above in the responses to arguments.

(4) As per Applicant's assertion that Burrows fails to satisfy the plain meaning of the claim language since it fails to disclose "[an] indexing scheme . . . between an entry of the database and a plurality of queries" instead of "between an input and contents of a database" (Amendment, pages 13-14), Applicant is directed to column 25, line 15 to column 26, line 39 of Burrows, wherein Burrows discloses a method wherein a user may state a query incorporating a date attribute and a word count. Moreover, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "[an] indexing scheme . . . between an entry of the database and a plurality of queries") are not recited in the rejected claim(s). Instead, the limitations of the claimed invention merely recite the building of a query index such that the query index is used to match an event with the range queries. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

iii. Optional-recited claim language

As per Applicant's assertion that claim limitations "expressed in the alternative" have no effect on patentable weight have been fully considered and persuasive. However, the rejection of independent claim 9 is sustained, and the methods of

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"providing a service" and "notifying a subset of customers" will not be examined further since they have been expressed in the alternative.

Conclusion

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Kim whose telephone number is (571) 272-2737. The examiner can normally be reached on M-F, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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